



CAMEX-4 Data Center Status



Michael Goodman
Global Hydrology & Climate Center
National Space Science & Technology Center
13 March 2002



Overview



CAMEX-4 Data & information system is comprised of:

- Web site
- FTP access
- Data sets
- Archive
- Documentation



Web Site





The fourth Convection and Moisture Experiment

Calendar | Related Sites | Data & Reports

necessary coastal evacuations and increasing the warni.

Instruments:

Aerosonde Andros Island NASA DC-8 NASA ER-2 KAMP

Participants:

Managers Principal Investigators Co-investigators Support Personne Aircrew

Hurricane & Flight Tracks

Hurricane Tracks Flight Tracks Satellite Tracks Flight Plans

News & Information:

Aircraft CAMEX-4 News CAMEX-4 Gallery CAMEX-4 Diary CAMEX-3 Website

Surface Data Sites:

Rawinsondes TRMM KAMP The Convection And Moisture Experiment (CAMEX) is a series of field research investigations sponsored by the Earth Science Enterprise of the National Aeronautics and Space Administrative (NASA). The fourth field campaign in the CAMEX series (CAMEX-4) is scheduled for 15 August - 24 September, 2001 and is based out of Jacksonville Naval Air Station, Florida.

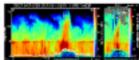
CAMEX-4 is focused on the study of tropical cyclone (hurricane) development, tracking, intensification, and landfalling impacts using NASA-funded aircraft and surface remote sensing instrumentation. The primary aircraft used during CAMEX-4 are the NASA DC-8 and ER-2 research airborne platforms. These instrumented aircraft will fly over, through and around selected hurricanes as they approach landfall in the Caribbean, Gulf of Mexico, and along the east coast of the United State. The NASA aircraft will investigate upper altitude regions of the hurricane not normally sampled. Where possible, measurements will be compared and validated with coincident observations from the QuikSCAT, Terra, and Tropical Ra will yield high spatial and temporal information of hurricane structure, dynamics, a aircraft, satellite, and ground-based radar observations is continually stree to improve hurricane predictions. More than the context of more traditional sections. More than the context of more traditional structure, dynamics, a stellite, and ground-based radar observations.

While remote sensing of the hurricane environment is the thunderstorm structure, precipitation systems, and atms:

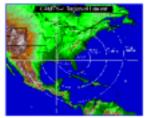
Area Microphysics Project. The objective of the KAMP flights is to improve quantitative precipitation estimates from passive and active microwave instruments.

The DC-8 will be based at Naval Air Station Jacksonville, Florida. Aircraft operations will be within a 1600 nm radius of Jacksonville. The KAMP flights will be approximately 300 nm from the air station near Key West Florida. The NASA DC-8 and ER-2 are the primary aircraft platforms for CAMEX-4. NASA will also be funding the flight of several unmanned aerial vehicles called the AEROSONDE.

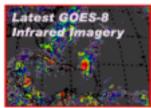
Dr. Ramesh Kakar (Program Manager for Atmospheric Dynamics and Remote Sensing at NASA Headquarters) is the CAMEX-4 sponsor. CAMEX-4 is conducted in collaboration with the National Oceanic and Atmospheric Administration (NOAA) Hurricane Research Division and the United States Weather Research Program (USWRP).



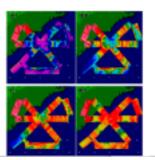
EDOP nada redectivity (left) and Doppler velocity (right) in an eart-west section across the Dominican Republic and its rean mountain ridge around 23:15.
UTC on 22 Sectember 1968. The Doppler velocity includes both air motion and hydrometeor fellopsed. This image was taken during the CAMEX-3 field experiment.



CAMEN-4 region of interect with range rings centered on Jacksonville Naval Air Station (AAX NAS). The research alternat will typically thy tropical cyclones in the Atlantic, Carlibbean or Gulf of Mexico within 800 neadooi niles of the Jacksonville base of operations.



Click Image to View the Latest GOES-8 Intrared Satelite Imagery

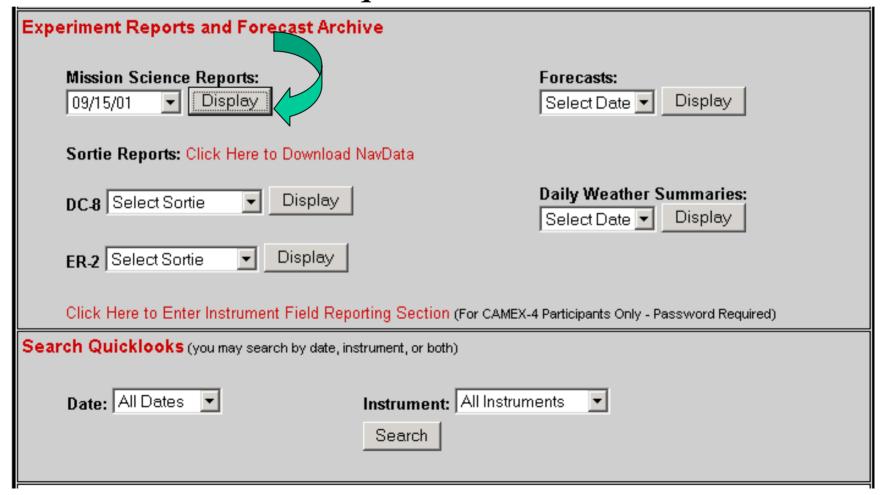




Search



Search database for reports, forecasts, weather summaries, and quicklooks





Mission Scientist Reports



Mission Science Report Archive

Mission Date: 09/15/2001

Mission Scientist: Zipser, Edward

Sortie Number:

DC-8 010414 ER-2 None

Aerosonde None

Mission Description:

2 a/c mission in TC Gabrielle, located near 30 N 79 W. (The ER-2 was desired but could not consider operating with the string crosswinds at JAX.) The mission can best be characterized as "extratropical transition", but it should prove to be an excellent data assimilation mission. It does not fit neatly into any category. The storm has just emerged off the Florida coast over the Gulf Stream, and the major issue was whether it would reorganize and intensify.

Mission Objective:

The principal objective was to map the somewhat unconventional flow fields and thermodynamic fields in a rotated figure-4 pattern, extended as far from the cyclone center as possible. The location on our doorstep permitted legs for the DC8 between 150-250 nm in radius in most quadrants, and mostly accomplished with close coordination with the NOAA P-3 on center crossings.

Mission Notes:

This storm defied the forecast models. It refused to reintensify as advertised over the Gulf Stream on this flight day. (The next day's mission was flown by the P3 and ER-2 only because DC8 had a mechanical problem. That day featured a storm approaching hurricane strength, again not well handled by the models.) The structure was unusual, with a dry southwest flow over and south of the center, and strong convection only to the N and NE of the center. Periodic outbreaks of intense convection persisted in these quadrants (and these quadrants only) for 48 hours, apparently being enough to deepen the storm. The DC8 patterns included several crossings of the dry slot on the SE side of the storm, with extremely low water vapor content measured by LASE and the JPL hygrometer. There were about 9 dropsondes launched, and the first 6 were transmitted to NHC before some unknown failure prevented the remainder from following. The total data coverage from the P3 and its drops, the DC8 and its drops, and the NOAA Gulfstream and its drops, should guarantee one of the most comprehensive data sets on any storm and its environment ever obtained. Modelers take note.

Ground/Other Assets Summary:

NOAA 49 track west and far NE of storm; many dropsondes



Search



Search database for field forecasts made by forecasters from Florida State University

Experiment Reports and Forecast Arch	ive
Mission Science Reports: 09/24/01 ▼ Display	Forecasts: 09/23/01 Display
Sortie Reports: Click Here to Download	NavData
DC-8 010418 (09/24/01) ▼ Display	Daily Weather Summaries: 09/24/01 □ Display
ER-2 01-142 (09/24/01) ▼ Display	
Click Here to Enter Instrument Field Repo	orting Section (For CAMEX-4 Participants Only - Password Required)
Search Quicklooks (you may search by date, ins	trument, or both)
Date: 09/24/2001 ▼	Instrument: All Instruments Search



Forecasts



CAMEX-4 Forecast Archive

Forecaster: Axe, Lizal Date: 09/23/2001

Initial Forecast Time: 1200 UTC

Initial Forecast

Tropical--Humberto is located at 30.5N 67.5W with 55 kt winds and central pressure of 994 mb. Satellite imagery shows good outflow to the north and the upper level low to its SW. The trough in the US continues to move E which will effect the storm in about 24-36 hrs. The shear is relaxing a bit which will allow for some further intensification and the SST's are high. But movement to the north the shear will increase and the SST's will become cooler. Elsewhere, no development is expected.

JAX--partly cloudy with patching fog. Winds NNE at 3 kt and a temp of 77.

EYW--mostly cloudy with heavy rain. Winds ESE at 10 mph and a temp of 81.

6 Hour Forecast

Tropical--Slight intensification of Humberto and moving to the NW.

JAX--PATCHY EARLY MORNING DENSE FOG. LOCAL VISIBILITIES NEAR ONE- QUARTER MILE AT TIMES. OTHERWISE...MOSTLY CLOUDY WITH A 60 PERCENT CHANCE OF AFTERNOON SHOWERS AND THUNDERSTORMS. HIGHS IN THE MID TO UPPER 80S. LIGHT AND VARIABLE WINDS...BECOMING EAST AROUND 10 MPH THIS AFTERNOON

EYW--PARTLY CLOUDY WITH ISOLATED SHOWERS AND THUNDERSTORMS. HIGHS IN THE UPPER 80S. EAST WINDS 10 MPH. CHANCE OF RAIN 20 PERCENT.

12 Hour Forecast

Tropical--Humberto will intensify slightly according to the NHC with winds just about cat 1 level. The storm will pass to the west of Bermuda with no problem. It will continue moving NNW around 10 kt.

JAX--MOSTLY CLOUDY WITH A 40 PERCENT CHANCE OF EVENING SHOWERS AND THUNDERSTORMS.

PATCHY LATE NIGHT FOG. LOWS NEAR 70. LIGHT SOUTHEAST TO SOUTH WINDS.

EYW--PARTLY CLOUDY WITH ISOLATED SHOWERS AND THUNDERSTORMS. LOWS IN THE UPPER 70S. EAST. WINDS 10 MPH. CHANCE OF RAIN 20 PERCENT.



Search Weather Summaries



Search database for weather summaries that provide a recap of the tropical weather at JAX, KAMP, and storm locations

Experiment Reports and Forecast Archive	
Mission Science Reports: 09/24/01 □ Display	Forecasts: 09/23/01 Display
Sortie Reports: Click Here to Download NavData	
DC-8 010418 (09/24/01) ▼ Display	Daily Weather Summaries: 09/24/01 Display
ER-2 01-142 (09/24/01) ▼ Display	
Click Here to Enter Instrument Field Reporting Section (For CAMEX	-4 Participants Only - Password Required)
Search Quicklooks (you may search by date, instrument, or both)	
Date: 09/24/2001 ▼ Instrument: All Instrument Search	ments 🔽



Weather Summaries



Daily Weather Summary			
Name: Liza Axe	Date: 09/24/01	0000 to 0000	
TropicalHumberto has and will continue we and west side of the storm today. Currently JAXpartly cloudy with showers and thunde On behalf of Krish's lab, thank you and good	it is located at 37.2N 63.9W with winds of rstorms due to the cold front passing throu	65 kt. gh the area.	

Missing a few summaries on:

- 17 & 27 August
- 4, 7, 10, 18-19 September



Search Flight Reports



Search database for information on the takeoff & landing, mission objectives, etc for the ER-2 and DC-8

Experiment Reports and Forecast Archi	ve
Mission Science Reports: 09/24/01 ▼ Display	Forecasts: 09/23/01 ▼ Display
Sortie Reports: Click Here to Download N	lav <mark>Data</mark>
DC-8 010418 (09/24/01) ▼ Display	Daily Weather Summaries: 09/24/01 □ Display
ER.2 01-142 (09/24/01) ▼ Display	
Click Here to Enter Instrument Field Repo	rting Section (For CAMEX-4 Participants Only - Password Required)
Search Quicklooks (you may search by date, inst	rument, or both)
Date: 09/24/2001 ▼	Instrument: All Instruments Search



Sortie Reports



Sortie Report Archive			
Report Filed By: Michael Craig			
Sortie ID 010418	Platform DC-8	Sortie Date 09/24/01	
Launch Time 1842	Landing Time 0313	Flight Hours Used 8.5	
Platform Status			

Pilot Name Ken Broda

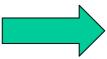
Mission Manager Mike Kapitzke

Co-Pilot Name none



DC-8 Ready			
Next Flight Plan Transit to Dryden	Sortie Report Archive		
Flight Path	Report Filed By: Michael Craig		
Flight Objective Hurricane Humberto Coves Miss	Sortie ID 01-142	Platform ER-2	Sortie Date 09/24/01
Pilot Name Ed Lewis, Jr	Launch Time 1830	Landing Time 0115	Flight Hours Used 6.7
Co-Pilot Name Bill Brockett	Platform Status ER-2 Ready Next Flight Plan Transit to Dryden		
Mission Manager Walter Klein			
Flight Path			
ED 2	Flight Objective Hurricane Humberto Coves Miss	sion	
I : I) ')			

ER-2





Search Quicklooks



Specify a specific instrument and/or a date to get a listing of quicklooks online.

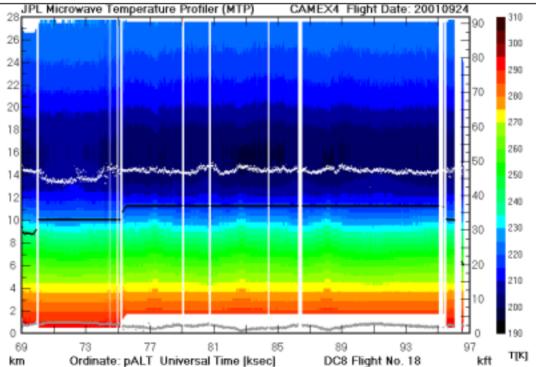
Experiment Reports and Forecast Archive	
Mission Science Reports: 09/24/01 □ Display	Forecasts: 09/23/01 ▼ Display
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DC-8 010418 (09/24/01) ▼ Display	Daily Weather Summaries: 09/24/01 □ Display
ER-2 01-142 (09/24/01) Display	
Click Here to Enter Instrument Field Reporting Sec	tion (For CAMEX-4 Participants Only - Password Required)
Search Quicklooks (you may search by date, instrument, or	both)
Date: 09/24/2001 ▼ Instrume Search	ent: MTP-DC-8



Quicklooks



Search Quicklooks (you may search by date, instrument, or both)			
Date: 09/24/2001 ▼ Instrument: MTP-DC-8 ▼ Search Search			
Quicklooks			
Date	Instrument	Quicklook	
09/24/2001	MTP-DC-8	c4d8MTP_2001.0924_010418_prelim-CTC.png	



PRELIMINARY DATA Principal Investigator: MJ Mahoney (Michael J.Mahoney @ JPLNASA GOV) PRELIMINARY DATA History: Flight 2001 09 24 00:00:00 Petrieved: 2001 09 06 19:42:28 Edited: 2001 09 25 04:00:59 Plotted: 2001 09 25 04:02:25



Search Aircraft Navigation CAMEX-4

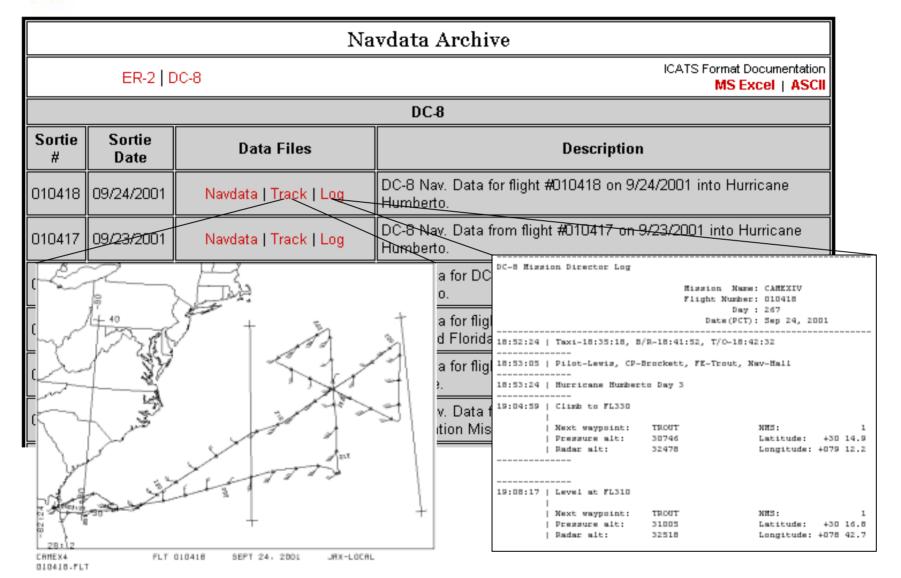


Experiment Reports and Forecast Archi	ve
Mission Science Reports: 09/24/01 ▼ Display Sortie Reports: Click Here to Download N	Forecasts: 09/23/01 □ Display NavData
DC-8 010418 (09/24/01) ▼ Display	Daily Weather Summaries: 09/24/01 □ Display
ER-2 01-142 (09/24/01) ▼ Display	
Click Here to Enter Instrument Field Repo	rting Section (For CAMEX-4 Participants Only - Password Required)
Search Quicklooks (you may search by date, inst	trument, or both)
Date: 09/24/2001 ▼	Instrument: All Instruments Search



Aircraft Navigation







Instrument Field Reports



Ехре	eriment Reports and Forecast Arch	ive		
	Mission Science Reports: 09/24/01 ▼ Display		Forecasts: 09/23/01 ▼ Displ	ay
	Sortie Reports: Click Here to Download	NavData		
	DC-8 010418 (09/24/01) ▼ Display		Daily Weather Summa 09/24/01 □ Displ	-
	ER-2 01-142 (09/24/01) Display			
	Click Here to Enter Instrument Field Repo	orting Section (For CAMEX-4	Participants Only - Password	Required)
Sear	ch Quicklooks (you may search by date, ins	strument, or both)		
	Date: 09/24/2001 ▼	Instrument: All Instrum Search	nents 🔽	



Daily Instrument Status



Determine disposition of daily in-field instrument reports

Instrument Debrief

Instrument: LASE

Instrument Status: Green

Sortie Number:

010418

Sortie Date: 09/24/2001

Launch Time:

1842

Landing Time:

0313

Flight Hours Used:

8.5

Instrument Scientist:

Ferrare , Richard

Instrument Performance

LASE performed well during this flight. No problems.

Science Observations

LASE acquired water vapor, aerosol, and cloud measurements both to and from Hurricane Humberto as well around the periphery of the storm. LASE measurements showed generally dry conditions existed, except in the immediate vicinity of the storm. The southern part of the storm was especially dry and cloud free, and LASE was able to measure water vapor within about 60-100 n. miles of the eye. The southeastern quadrant was also mostly cloud-free and LASE was able to measure water vapor in this location. LASE zenith measurements showed cirrus cloud tops were nearly always at or below 14 km.



Calendar





The fourth Convection and Moisture Experiment

NASA

Calendar | Related Sites | Data & Reports

Instruments:

Aerosonde Andros Island NASA DC-8 NASA ER-2 KAMP

Participants:

Managers Principal Investigators Co-Investigators Support Personne Aircrew

Hurricane & Flight Tracks

Hurricane Tracks Flight Tracks Satellite Tracks Flight Plans

News & Information:

Aircraft CAMEX-4 News CAMEX-4 Gallery CAMEX-4 Diary CAMEX-3 Website

Surface Data Sites: Andros Island Rawinsondes TRMM KAMP

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CAMEX-4 is focused on the stud NASA-funded aircraft and surface ER-2 research airborn platforms landfall in the Caribbean, Gulf of I regions of the hurricane not norm observations from the QuikSLAT temporal information of hurricane aircraft, satellite, and ground-bas continually strive to improve hurri necessary coastal evacuations a



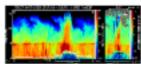
cking, intensification, and landfalling impacts using craft used during CAMEX-4 are the NASA DC-8 and i, and around selected hurricanes as they approach tates. The NASA aircraft will investigate upper altitude. If he compared and validated with coincident satellites. This study will yield high spatial and hen analyzed within the context of more traditional sight to hurricane modelers and forecasters who tions at landfall will result in decreasing the size of

While remote sensing of the hum.

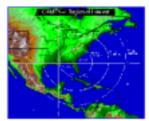
AEX-4, there will also be separate flights to study thunderstorm structure, precipitation systems, and atmospheric water vapor profiles. This portion of CAMEX-4 is known as KAMP, Keys Area Microphysics Project. The objective of the KAMP flights is to improve quantitative precipitation estimates from passive and active microwave instruments.

The DC-8 will be based at Naval Air Station Jacksonville, Florida. Aircraft operations will be within a 1600 nm radius of Jacksonville. The KAMP flights will be approximately 300 nm from the air station near Key West Florida. The NASA DC-8 and ER-2 are the primary aircraft platforms for CAMEX-4. NASA will also be funding the flight of several unmanned aerial vehicles called the AEROSONDE.

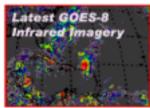
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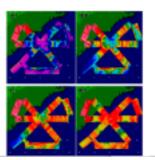
EDOP nadir radar reflectivity (left) and Doppler velocity (right) in an east-west section across the Dominican Republic and its main mountain ridge around 23:15 UTC on 22 September 1990. The Doppler velocity includes both air motion and hydrometeor fallspeed. This image was taken during the CAMEX-3 field experiment.



CAMEN-4 region of interect with range rings centered on Jacksonville Naval Air Station (AAX NAS). The research alternat will typically thy tropical cyclones in the Atlantic, Carlibbean or Gulf of Mexico within 800 neadooi niles of the Jacksonville base of operations.



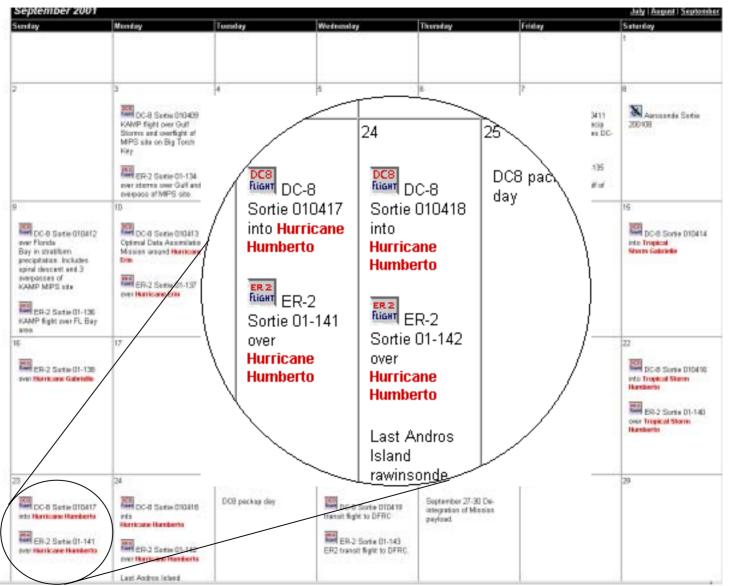
Click Image to View the Latest GOES-8 Infrared Satelite Imagery





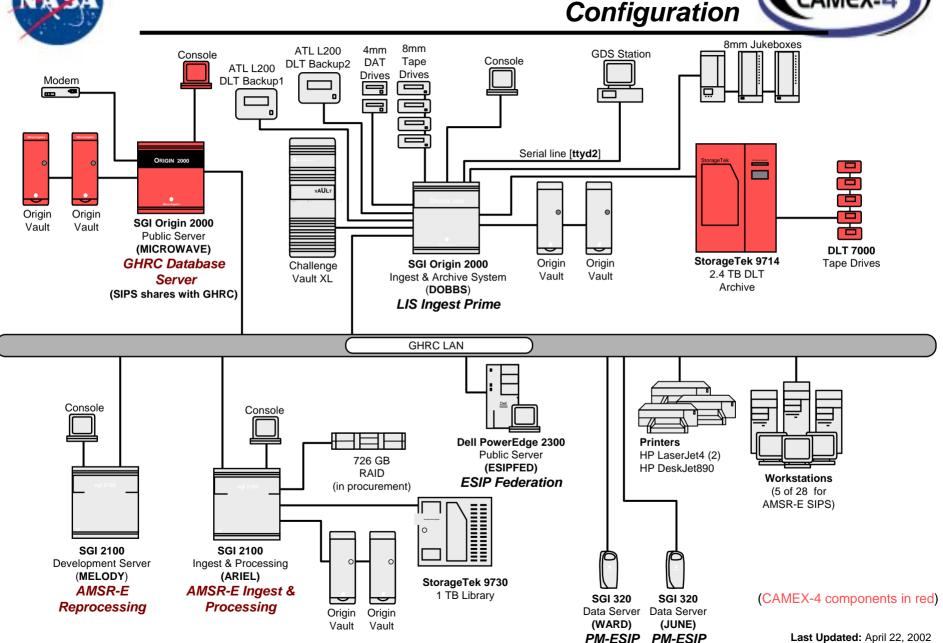
Calendar





Global Hydrology Resource Center's Hardware 8mm 4mm ATL L200 Console DAT Tape Console DLT Backup2 ATL L200 Drives Drives







FTP Access



Most data sets will be accessible via anonymous FTP at:

microwave.msfc.nasa.gov

- -/pub/browse/camex4
- -/pub/data/camex4
- -/pub/doc/camex4

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Data Set Availability



CAMEX-4 Dataset Availability		
Data Set Name	Status	
CAMEX-4 2D Particle Spectrometer Probes (2DP)	Available at a later date	
CAMEX-4 2nd Generation Precipitation Radar (PR-2)	Available at a later date	
CAMEX-4 Aerosonde Data	Available at a later date	
CAMEX-4 AMPR Brightness Temperature (Tb)	Download Now	
CAMEX-4 Andros Island Rawinsonde and Radiosondes	Available at a later date	
CAMEX-4 Cloud Particle Imager Probe (CPI)	Available at a later date	
CAMEX-4 Conically-Scanning Two-look Airborne Radiometer (C-STAR)	Download Now	
CAMEX-4 Counterflow Virtual Impactor (CVI)	Available at a later date	
CAMEX-4 DC-8 Dropsonde	Download Now	
CAMEX-4 Dual-Beam UV-Absorption Ozone Photometer	Order Now	
CAMEX-4 DC-8 Information Collection and Transmission System	Order Now	
CAMEX-4 DC-8 Lightning Instrument Package (LIP)	Available at a later date	
CAMEX-4 DC-8 Microwave Temperature Profiler (MTP)	Available at a later date	
CAMEX-4 ER-2 Doppler Radar (EDOP)	Currently Browse Only	
CAMEX-4 ER-2 High Altitude Dropsonde	Order Now	
CAMEX-4 ER-2 Lightning Instrument Package (LIP)	Available at a later date	



Surface and Radar Database



Need assistance in defining the formats and software for archive and distribution

- Andros Island sondes to be delivered next week
- NOAA P3 received tapes; need to copy
- XPOW received via FTP 250,000+ files; repackaging into daily data sets
- SMART-R received data; developing documentation
- MIPS working with Knupp and Walters
- NPOL need to work arrangements with Gerlach
- TOGA need to work arrangements with Gerlach



Aircraft Database



Aircraft data sets received in various forms:

- DC8 Navigation received data and flight tracks
- ER2 Navigation received data and flight tracks
- DC-8 Forward & Nadir camera to receive VTR tapes next week
- DC8 Dropsondes received data and skew-T
- ER2 Dropsondes received data and skew-T
- AMPR received data and browse
- EDOP received browse
- C-STAR received data and browse
- NOAA Hygrometer received data
- NOAA Ozone received data
- MAS expect to receive data next week



Adding Functionality



- 1. Actively pursue adding data sets to the archive
- 2. Increase the functionality of the web site:
 - populate ftp site with online data sets
 - interactive cross links between calendar,
 browse, and reports and data sets
 - documentation, documentation, documentation



Documentation



The data center needs to be able to support user requests for data and information. Integral part of the data archive.

- 'ReadMe' provides basic information about the instrument and data set . Documentation jointly developed by PI and GHRC
 - General information
 - Instrument information
 - CAMEX-4 flight operations summary
 - File format with file name descriptions
 - References
- Software in form of subroutine or program that enables a user to read the data (commercial or PI-developed)
- Online catalog brief description of the data/instrument and a date range of data availability. Developed by GHRC



Point of Contact



Michael Goodman – general issues

- michael.goodman@nsstc.nasa.gov
- 256 961 7890

Steve Jones – arrange for data transfer

- steve.l.jones@nsstc.nasa.gov
- 256 961 7879

Richard Wohlman – documentation and user services

- richard.wohlman@nsstc.nasa.gov
- 256 961 7932